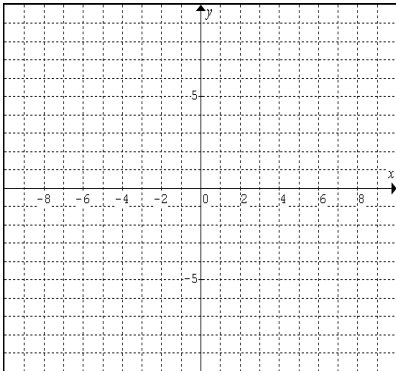


Quadratic Inequalities

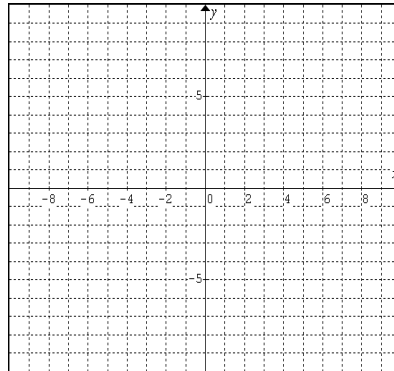
Name _____

Graph each inequality.

1. $2 < x^2 + 2x - 5$



2. $x \geq (x-1)^2 - 3$



3. A football thrown by a quarterback follows a path given by $h(x) = -0.0095x^2 + x + 7$, where h is the height of the ball in feet and x is the horizontal distance the ball has traveled in feet. If any height less than 10 feet can be caught or knocked down, at what distances from the quarterback can the ball be knocked down? *Justify your answer with a complete sentence.*

4. A person standing on the ground outside a building throws a set of keys directly upward to a person standing on a second-floor balcony. The person on the ground releases the keys with an initial vertical velocity of 28 ft/s from a height of 4 ft. The function $h(t) = -16t^2 + 28t + 4$ models the height (in feet) of the keys at time t (in seconds) after the keys are thrown. The person standing on the balcony can catch the keys once they reach a height of 14 ft. For what period of time are the keys high enough to be caught?

5. The profit a coat manufacturer makes each day is modeled by the equation $P = -x^2 + 120x - 2000$, where P is the profit and x is the price for each coat sold. For what values of x does the company make a profit?

6. A consultant advises the owners of a beauty salon that their profit p each month can be modeled by $p(x) = -50x^2 + 3500x - 2500$, where x is the average cost that a customer is charged. What values of costs will bring in a profit of at least \$50,000? *Justify your answer with a complete sentence.*